What is claimed:

1. A process for the manufacture of phenolic compounds comprising:

a) separating a neutralized aralkyl hydroperoxide cleavage mass stream containing salts of neutralization into a crude ketone stream and a crude phenolic stream containing the salts of neutralization;

b) separating the crude phenolic stream into a concentrated phenolic-rich stream, enriched in phenolic compounds, and a crude phenolic bottoms stream enriched in tars and alpha methyl styrene dimers, each compared to the crude phenolic stream, said crude phenolic bottoms stream containing salts of neutralization;

c) to the crude phenolic bottoms stream, adding water and a diluent composition, thereby forming a phase separable crude phenolic bottoms stream, said diluent composition comprised of hydrocarbons phase compatible with the crude phenolic bottoms stream and having a combined density lower than the density of the crude phenolic bottoms stream;

d) separating the separable crude phenolic bottoms stream into a hydrocarbon phase and an aqueous phase containing salts of neutralization;

whereby the amount of salts of neutralization in the hydrocarbon phase is reduced compared to the amount of salts of neutralization present prior to separation.

2. The process of claim 1, wherein the weight ratio of diluent composition to crude phenolic bottoms stream is at least 0.15:1.

3. The process of claim 2, wherein the weight ratio of diluent composition to crude phenolic bottoms stream is at least 0.3:1.

4. The process of claim 1, wherein the volume ratio of water to crude phenolic bottoms stream is at least 1:1.

5. The process of claim 1, comprising:

(i) adding the diluent composition to the crude phenolic bottoms stream thereby forming a diluted crude phenolic bottoms stream, and

(ii) subsequently mixing water to the diluted crude phenolic bottoms stream, thereby forming a separable crude phenolic bottoms stream.

6. The process of claim 5, wherein the ratio of diluent to crude phenolic bottoms stream is at least 0.3:1, and the volume ratio of water to diluted crude phenolic bottoms stream ranges from 1.5:1 to 3:1.

7. The process of claim 6, wherein the diluent composition comprises less than 20 wt.% of phenolic compounds.

8. The process of claim 7, wherein the diluent composition comprises cumene and α-methyl styrene.

9. The process of claim 6, further comprising:
(i) separating said crude ketone stream into a concentrated ketone-rich stream, enriched in ketone over the crude ketone stream, and a crude ketone bottoms stream;
(ii) feeding at least a portion of the crude ketone bottoms stream as said diluent composition to the crude phenolic bottoms stream in step c).

10. The process of claim 9, further comprising feeding a portion of said crude ketone bottoms stream to a neutralization zone for neutralization of a aralkyl hydroperoxide cleavage mass.

11. The process of claim 6, wherein a portion of said aqueous phase in step d) is recirculated and used as the water in step cii), and a portion of the aqueous phase is purged as a salt water purge.

12. The process of claim 11, wherein the salt water purge contains at least 80 wt.% of salts present in the crude phenolic bottoms stream.

13. The process of claim 6, wherein at least 90% of the salts present in phase separable crude phenolic bottoms stream prior to separation are removed from said hydrocarbon phase.

14. The process of claim 1, wherein said separation in step d) is conducted in a phase separation vessel at a temperature above 110°C and a pressure sufficient to keep

the separable crude phenolic bottoms stream in the liquid phase.

15. The process of claim 1, further comprising:

(e) separating said hydrocarbon stream into a light ends stream, enriched in phenolic compounds, and a tarry stream enriched in tars, said tarry stream having a reduced amount of salts of neutralization relative to the crude phenolic stream.

16. The process of claim 15, wherein at least a portion of said light ends stream is re-circulated to a neutralization zone in which an aralkyl hydroperoxide cleavage mass is ~~neutralized~~.

17. A process for the manufacture of phenolic compounds comprising wholly or partially neutralizing a aralkyl hydroperoxide cleavage mass containing an acid and having a pH of less than 6 in the neutralization zone, thereby forming an aqueous neutralized aralkyl hydroperoxide cleavage mass containing salts of neutralization, subsequently separating said aqueous neutralized aralkyl hydroperoxide cleavage mass into an aqueous stream and a neutralized aralkyl hydroperoxide cleavage mass stream containing a smaller amount of salts than in the aqueous stream, subsequently separating the aralkyl hydroperoxide cleavage mass into a crude ketone stream and a crude phenolic stream containing the salts, separating said crude acetone stream into a concentrated ketone rich stream and a crude ketone bottoms stream, separating said crude phenolic stream into a concentrated phenolic-rich stream and a crude

phenolic bottoms stream, separating the crude phenolic bottoms stream into a light ends stream and a tarry stream containing an amount of salts reduced by at least 90% of the amount of salts contained in the crude phenolic bottoms stream, and recycling at least a portion of said crude ketone bottoms stream and at least a portion of said light ends stream as feeds to said aralkyl hydroperoxide cleavage mass, said aqueous neutralized aralkyl hydroperoxide cleavage mass, or to both.

18. The process of claim 17, wherein at least a portion of said crude ketone bottoms stream and at least a portion of said light ends stream are recycled to said aralkyl hydroperoxide cleavage mass prior to neutralization.

19. A composition comprising at least 40 wt.% water, less than 20 wt.% phenolic compounds, alkali metal salts in an amount of at least 1.5 wt. %, phenolic tars, and α-methyl styrene dimers, wherein the volume ratio of water to all ingredients in said composition other than water is between 1:1 and about 3:1.

20. The composition of claim 19, comprising 50 wt.% or more of water, greater than 5 wt.% cumene, greater than 1 wt.% α-methyl styrene, less than 10 wt.% phenol, phenolic tars present in an amount of less than 6 wt.%, and α-methyl styrene dimers present in an amount of less than 4 wt.%.

21. The process of claim 1, wherein all or a portion of the aqueous stream is purged as an aqueous purge stream from the process, and the total amount of the aqueous purge

stream containing salts of neutralization is less than 5 parts by weight per hour based on 100 parts by weight per hour of the aralkyl hydroperoxide cleavage mass stream.

22. The process of claim 21, wherein the net amount of aqueous purge stream discharged from the process is less than 1 part by weight per hour.

23. A process for removing salts of neutralization present in a partially or wholly neutralized aralkyl hydroperoxide cleavage mass comprising removing 80 wt.% or more of said salts from said cleavage mass through one or more aqueous streams discharged and purged from said process, the combined flow rate of all aqueous purged stream(s) containing the salts being less than 5 parts by weight per hour based on a flow rate of 100 parts by weight per hour of said cleavage mass fed to a means for separating said cleavage mass into a crude ketone stream and a crude phenolic stream.

24. The process of claim 23, wherein at least 90 wt.% of the salts are removed, and the flow rate of the aqueous discharge stream(s) is less than 1 part by weight per hour.

25. The process of claim 23, wherein the flow rate of the aqueous discharge stream(s) is less than 0.5 parts by weight per hour.

26. The process of claim 23, wherein said aralkyl hydroperoxide comprises cumene hydroperoxide, said ketone

comprises acetone, said phenolic comprises phenol, and said salt comprises an alkali metal sulfate.

27. A process for manufacturing phenolic compounds comprising feeding a wholly or partially neutralized aralkyl hydroperoxide cleavage mass containing salts of neutralization to a splitter, separating acetone and phenol from said cleavage mass in the splitter, removing all or a portion of the phenol from the splitter, followed by feeding said all or a portion of said phenol to a phase separation vessel having a volume of 5000 gallons or less, based on 100 parts by weight per hour of cleavage mass feed to the splitter, and removing at least 80 wt.% of the salts of neutralization from said phenol.

28. The process of claim 27, wherein the size of the separation vessel is 3500 gallons or less.

29. A process for removing salts of neutralization, comprising feeding an aralkyl hydroperoxide cleavage mass containing salts of neutralization to a splitter, separating acetone from a crude stream of phenol in said splitter, followed by feeding a portion or all of said crude phenol stream to a phase separator as a feed comprising hydrocarbons, water, and salts of neutralization, the total amount of hydrocarbon feed from any source to said separator being less than 10 parts by weight per hour, based on 100 parts by weight per hour of said cleavage mass fed to the splitter, wherein at least 80 wt.% of the salts of neutralization are removed from the crude phenol stream.

30. The process of claim 29, wherein the total amount of hydrocarbon feed to the phase separator is less than 7 parts by weight per hour.

31. The process of claim 30, wherein the total amount of hydrocarbon feed to the phase separator is 5 parts by weight per hour or less, and wherein at least 90 wt.% of the salts of neutralization are removed from the crude phenol stream.

32. A process for removing salts of neutralization from an aralkyl hydroperoxide cleavage mass containing salts of neutralization comprising separating acetone from said cleavage mass, followed by purging the salts of neutralization in an aqueous purge stream comprising at least 3 wt.% of the salts of neutralization and at least 90 wt.% water, based on the weight of the purge stream.

33. The process of claim 32, wherein the aqueous purge stream comprises at least 4 wt.% of salts of neutralization.

34. A process for making phenol comprising feeding an aralkyl hydroperoxide cleavage mass containing salts of neutralization into a splitter and separating the cleavage mass in the splitter into a ketone stream and a phenol stream containing the salts, optionally concentrating the phenol stream by further distillation, and forming a phase separable hydrocarbon stream from said phenol stream comprising adding a net amount of water of 5 parts by weight per hour or less to the phenol stream, based on 100 parts by weight per hour of cleavage mass fed to the

splitter, phase separating the phase separable hydrocarbon stream into an aqueous stream and a hydrocarbon stream, and discharging a portion or all of the aqueous stream from the process as an aqueous purge stream, wherein at least 80 wt.% of the salts of neutralization present in the cleavage mass entering the splitter are removed through said purge stream.

35. The process of claim 34, wherein the net amount of water added is 2 parts by weight per hour or less.

36. The process of claim 35, wherein the net amount of water added is 1 part by weight per hour or less.

37. The process of claim 36, wherein the net amount of water added is 0.5 parts by weight per hour or less.

38. The process of claim 37, wherein at least 90 wt.% of the salts of neutralization are removed through said purge stream.

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